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REMARKS

ON THE

DISEASE

CALLED

HYDROPHOBIA:

Prophylactic and Curative.

BY JOHN MURRAY,

F.S.A. F.L.S. F.H.S. F.G.S. &c. &c.

"Namque ægrotanti oblatam frigidam aquam, ipse repentè horrescit, et linquitur animo." MARCELLUS DONATUS.

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This will, I am aware, be pronounced by many a hopeless task and attempt, after all that has been said and done; and that nothing has yet succeeded in the case truth prompts me to acknowledge, while the medical world every where yields a common consent. Its aspect presents to us a very bad complexion, and altogether the theme is a most forbidding one. The catholicons of medicine seem to have triumphed in almost every case but this, yet completely paralyzed here, the inquest of Therapeutics has pronounced it incurable. The knowledge of a disease, it is said, is half its cure, but here again we are at bay, and its pathology is wrapt up in such impenetrable darkness as to defy the keenest scrutiny of mental vigour, and it is indeed truly painful to contemplate the diversity and contrariety of opinion which prevails on this question. Some contend that it is one connected with the nervous mechanism; while others consider that all this is the mere effect of a derangement of the sanguiferous system, and hence the nervous conflict is sympathetic and secondary. A third class supposes it to be a morbid glandular affection; while a fourth class attributes it to a specific morbid virus. Passing over some other aspects of opinion, the most extraordinary of all is that which, imbued with the spirit of Berkeley's idealism, would have us to believe that it exists only in name—a mental ghost that haunts and kills—a fatal image of imagination.

As to the seat or source of the disease, the entire anatomical structure has been ransacked. The pia mater of the brain—medulla spinalis—trachea—æsophagus—the stomach—the nerves, and heart,—the pulmonary and circulating apparatus,—all have had their respective advocates; and this variable opinion is the necessary consequence of the difficulty there obtains in distinguishing which is the primary cause, and which the sequence; thus does it resolve itself into a question of cause and effect, and is not easily determined. The medical treatment has run the gauntlet of all the "juleps" of the *materia medica*, and all have been as often found helpless and unavailing. Antispasmodics, tonics, and all the routine of remedial art have by turns been employed, and as often proved hopeless—no warrant from the grave, scarce even a few hours respite from the intensity of suffering or alleviation of agony. The soul catches alarm from the hopelessness of the disease that preys upon it, and sinks in despair; and who in this case can "minister to the mind diseased?" Among the formidable array of remedies tried, however, an *alexipharmic*, if we are not deceived, seems neither to have been contemplated nor employed, or at least not in the way likely to be most efficient.

Since these things are so, it is unwarrantable and unwise to repeat the same routine, when there is not a ray from any point to gild the horizon of hope. The disease gains ground every moment, and its progress is rapid—almost beyond a parallel: the patient's days are indeed numbered, and their period of duration but a span. "Although," says Professor Brande, "truth compels us to admit the futility of all previous curative attempts, no physician would feel that he had fulfilled his duty by remaining a passive and inert spectator of the phenomena of the disease whenever his aid might be required. But how is he to proceed? Shall he waste the precious hours of action, and almost the only time he can improve, in a vain

recurrence to obsolete specifics, and abortive expedients?" Surely not. We wish this precept might guide the Medical Practitioner, and rouse his energies from the torpor which enthrals them; if there be a case wherein experiment is legitimate, when guided by rational views and supported by inductive inference, surely this is it. For twelve years past the present question has often floated through my mind, and been the image of my thoughts; and these remarks are submitted in the tone and temper of respectful deference to the attention of the medical world;—not in the spirit of dictation, which is indeed a sentiment far removed from my thoughts—but as suggestions long indulged, likely to afford a rational hope of cure, and emanating from one these many years an assiduous labourer in the kindred field of chemical science. Though not a medical practitioner, the Chemist, it is hoped, is not out of place in suggesting the medical application of the fruits of the Laboratory, since the physician owes to him the almost entire phalanx of his curative means. Neither envy nor jealousy can prompt a scowl, where the object is so peculiarly the desire of philanthropy, and when darkness and despair brood over it. In all attempts to combat this mighty hydra of disease the lance recoils pointless, and the confession is wrung from every one—"It it not in me." While we contemplate, in the rapid advancement of science, such bright discoveries and such noble achievements, Hydrophobia remains a blot on her shield and escutcheon—the unconquered Goliath of disease—and one victim after another falls. The physician repeats the same round, and death hovers over, ready to pounce on his accustomed prey: year after year the same remedies are prescribed, and the same invariable fatality ensues. We consider the constant recurrence to unsuccessful remedies little short of criminality, because they argue no effort to save.

The medical practitioner should not allow the idea of the case being hopeless to enter his mind, for if once admitted it is sure to impart a lethal pause. It is quite legitimate to say, that hydrophobia is incurable by all the means hitherto employed ; but as chemistry has not yet been exhausted upon it, and her laboratory teems with extraordinary powers and virtues, and in anticipation shews us many more, it is unwarrantable to pronounce hydrophobia absolutely incurable, even in reference to those that are known. The terrified miner foiled in all his attempts to subdue his enemy, at length petitioned the chemical philosopher for relief. Providence pointed to Sir H. Davy, and the problem was solved, and the rejoicing miner at last saw his destroyer imprisoned and fluttering in a cage ; chemistry may achieve a triumph over hydrophobia as well as over the fire damp of mines ; and it is the glory of the present age not so much to hunt after new chemical materials as to apply those already collected to useful practical purposes.

The mind ought to be roused to a double exertion of all its powers, and summon its concentrated strength to bear upon the question at issue, with the whole host and apparatus of the powers of healing. We protest against the employment of any of those useless means which have times without number been tried, and as often without avail. We have ventured into the arena in the firm belief that all that might have been done has not yet been done, and that the plan recommended is based on rational principles, and founded on solid ground. It is not empirical, but seems inductive—the text indeed, in some measure, is taken from the "Nouveau Traité de la Rage" of Trolliet of Lyons—the rest depends on the phenomena developed by the lights of modern science, conjoined with some new views and reasonings. Our motives are conscientious ; believing from the heart that it was a solemn duty to cast our feeble mite of knowledge into the general treasury of science, entertaining no fears of being considered obtrusive by a high

minded, generous, and noble profession. Should the mantle of discovery fall on another, we shall be among the first to hail it with acclamation, and heartily rejoice in the triumph. That we did what we could, will be enough for us. A triumph like this is true glory, while ephemeral are the honours of many an enterprise of human exertion. "Vera gloria," says Tully, "radices agit atque etiam propagatur, ficta omnia celeriter tanquam flosculi deciduunt nec simulatum potest quidquam esse diuturnum.

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HYDROPHOBIA.

CHAPTER I.

INTRODUCTION—PHENOMENA OF LIFE—DEFINITION OF THE TERM HYDROPHOBIA, &c.—PREDISPOSING CAUSES——AN INTERESTING CASE OF THE DISEASE.

"PRODESSE" should be the motto of the man of science, and it should be his aim to bring the fruits of his studies to bear on the comfort and happiness of mankind; if this is withheld, his abstractions are neither worth the pursuit nor possession. If he has gleaned nothing useful in his career, his life has been as unprofitably and as vainly spent, as if he had hunted a bubble or pursued a shadow. The acquisition of knowledge when made to bear on the economy of our existence, becomes a prize worth contending for, and

when it brings relief to suffering humanity it displays its fairest feature. The solution of a mathematical problem can only interest the favoured few, but all may understand the question when humanity is blessed and benefited. The division of labour in science is a very wise provision—an universal genius is a mere "utopia," a phantom of the brain, something to be wondered at, but that can have no real existence. The accumulation of facts is immense, but the useful application of what is known is more limited. If we take a peep into the treasures of chemistry we shall soon become sensible that this is the case; a vast multitude of salts, nay very many of the metals and several of the earths are a rare acquisition, and seldom seen. To increase the amount of facts and phenomena is a very laudable enterprise, but it is not less useful to apply to practical purposes what is already known. In the present instance we have to do with a question which has baffled and defied medical skill, and should relief be eventually obtained, the source whence it comes, or the medium through which it passes, ought not to be scrutinized too severely; and if there appear to be rational grounds for its adoption, those practically interested, and who alone have it in their power to make the experiment, are certainly under an obligation to do so, unless cause to the contrary

can be shown. The present state of the case warrants us in suggesting a probable remedy. Thus the editor of the Quarterly Journal of Foreign Medicine and Surgery, (Vol. III. p. 531,) enters on "the very unpromising subject with despair." Dr. Heberden says "Hydrophobiam ex morsu animalis rabiosi nunquam vidi." Dr. Moseley observes on this subject, "Boerhaave is bad, Mead worse, and the rest, with very few exceptions, contemptible." Not many years ago a professor in the metropolis told his pupils that were he called to a case of hydrophobia he should administer subacetite of lead! which had been done before. And we read of the sage advice propounded by a *physician* to inject cold water into the stomach by means of a syringe: to these a physician and physiologist of no mean celebrity informed us that he would employ the remedy proposed by Celsus, to drown the patient, and take the chance of recovery! Indeed this is a disease the very name of which is terror, and its fatalism is relieved by no ray of promise. It is the armoury of suffering and death—*exeunt omnes.* Mead in despair only repeats the language of the Greek physician respecting it. "Death is the physician that cures." Bardsley recommends a quarantine for dogs, which Hunter had already done. He confesses the case is in its complexion

most hopeless, and that any proposed method of cure, having but a reasonable ground of success, is entitled to attention and gratitude. In the case of hydrophobia subsequently detailed, an eminent physician of Dublin said all that could be done for the patient was bleeding copiously that he might die easily!

These are very discouraging prospects, and the case gloomy and desponding to a degree which is without a parallel: we have before us the details of some melancholy instances of hydrophobia, which display the same unfortunate routine, and close by the same sad fatality. One among the most recent and distressing of these is that of Mr. Hervey, of Belfast, detailed in the "Northern Whig," and in this case some "morphine" dropped on sugar seems to have been the only remedy administered to the unhappy patient! The case itself is too painful and dreadful for recital or mention. One of his extraordinary symptoms evidently shows its *nervous* connexion—a sensation in his limbs as if pricked with the finest needles—or as if "the finest silver barbed arrows were darting through every part of his body"—altogether, he said, "a delightful sensation." A medical gentleman, on the subject of hydrophobia, excused himself for not giving the question particular attention, by stating that it was

comparatively rare, and not probable he should ever be called to a case of the kind!

Man is a miracle, and the whole scene of existence a circle of wonders. Encased within this mystic temple are the collected and concentrated phenomena of mechanical and chemical science, all impressed with the signet of deity. Connected with its curiously organized structure, yet altogether independent of it is that wondrous unity called *mind*, scowling over the icy chain with which materialism would enthral it, and asserting its right and title to a heaven-born origin. Animated by the principle of life which puts the machine in motion, and subordinates all its parts and functions to its controul, the several departments of living being perform their obedient offices, and the respective organs secrete or assimilate what has been introduced into the system. Muscle is deposited where muscle is wanted, and no where else, and bone is replaced where portions of bone have been abraded or destroyed. Each organ performs its several part and secretes what is wanted, and no other substance—disorder and confusion are unknown, and one function interferes not with another; there reigns throughout the system of life, the *lucidus ordo*, muscle is not secreted among the bone, nor osseous matter deposited among the plexus of muscular fibre: there is no mistake;

ruin is repaired, and lost or suspended functions restored. The nervous power concentrated in the ganglia shoots elastic along the lines of nerves, and the black and exhausted blood excreting its superabundant carbon at its pier head, the lungs, takes in exchange a fresh supply of oxygen, and flushing with vermilion circulates again, and yields in its revolution the principles that supply the waste, or recruit the exhausted strength of the animal machine.

The principle of life, whether in the vegetable or animal kingdom, like its Almighty Author, "no man hath seen at any time, neither indeed can see." To-day we contemplate the flower unfolding its blossoms, bathed in all the beauties of the rainbow: to-morrow its loveliness is eclipsed —its blossoms are scattered to the four winds of heaven: it is leafless, withered, and in ruin. The fountain hath dried up—that principle hath fled. In like manner does the more subtile animal organization suffer. The fabric is more complex, and the ruin is necessarily more formidable. When the "silver cord is loosed, and the golden bowl is broken," the several parts act and re-act on each other, and the fair architecture reared by no mortal hand, which we so much venerated, and admired, and loved—the statuary of heaven totters from its pedestal and tumbles

into dust. As long as that superadded something called *life* presides at the helm of being, the gastric fluid is limited to its distinct sphere, and subordinated to its proper function *digestion;* but when life drops the sceptre, it immediately begins to corrode and devour the villous membrane which confined it, and in which it nestled. Numerous are the enemies on every side that wage war with life, but from none has it to sustain a more furious onset than from the disease called in common parlance, Hydrophobia.

Hydrophobia has also been called *rabies canina*, but in both it is a misnomer. Since the former is expressive of a dread of water—a symptom peculiar only to the disease in man, for dogs and wolves have been seen not only to take water greedily, but plunge into it and swim across rivers. In the detail of a case before us, communicated by H. A. Thomson, it is stated that the day before the dog died it was observed lapping water. Neither is the disease peculiar to the dog, as *rabies canina* would imply; it has its *spontaneous* origin also in the wolf, the cat, the fox, and it is stated moreover in the badger—perhaps too in other creatures. From these sources it is communicated to other animals, being inoculated into the system by their bite. Herbivorous animals do not appear to possess the power of

communicating so readily the disease to others—at least we are not acquainted with any distinct and unequivocal testimony of this description. The virus of this poison, however, is the same in all—carnivorous as well as herbivorous—a fact which has been clearly and satisfactorily proved, by means of experiments made on the lower animals, by inoculating them from the human rabid subject: thus M. M. Majendie and Breschet took some of the saliva of a patient who died at the Hotel Dieu at Paris, on the 19th June, 1813, of hydrophobia, and inoculated two healthy dogs with it. One became rabid on the 2d of July, and bit two others, one of which was at the height of the disease on the 26th August. The *saliva* here is to be considered the frothy matter disengaged from the mouth of the patient. Trolliet thinks such animals can do it, but that the formation of their teeth is counter to its communication.

When we read of "spontaneous hydrophobia" in the human subject, without the most distant evidence of any dog, cat, fox, or wolf, &c. having on any previous occasion inflicted a wound, we may very reasonably indulge a doubt of its being hydrophobia, though some of its symptoms may accompany the disease. Tetanic and epileptic cases, modified by circumstances and idiosyncrasies may easily enough be mistaken for it.

We can readily believe that instances may occur wherein, from constitutional powers, the morbid virus may slumber in the system for a twelve-month or even more before it bursts forth with its accustomed violence, and the powers of the animal, independent of the constitution invaded, will determine its more prompt or more tardy development. Thus, in the infliction of wounds by a rabid wolf, the symptoms of hydrophobia are exhibited in a few weeks, while in that of the dog five or six months may elapse. It has been stated that the seeds of the disease may lie dormant in the human system for even twenty years, and a case has been cited to prove it, but all this seems very questionable. Bardsley mentions an instance of hydrophobia after a lapse of twelve years from the bite of a mad dog.* As to the predisposing causes which give rise to the disease in the inferior animals which are the subjects of it, *heat* has been specified as the chief agent, but it is very clearly proved that the seasons of the year have no specific influence in this respect.

In Canterbury, and near Milbourne Port, in Dorsetshire, during the intensely severe weather of last winter, hydrophobia was manifested, and it is

* "Medical Reports," London, 1807, p. 237.

when pressed by hunger, during the severity of the weather in alpine regions that the wolf descends into the plain, commits such dreadful ravages among the herds and flocks, and communicates the rabid virus: a rabid wolf, in the year 1817, wounded twenty-three persons besides cattle and dogs, in the department of the Isère. During the late severe weather numerous wolves and some bears rushed from the Pyrenees into the plain, and committed terrible ravages; musketry were fired to scare them from the regal palace at Granja; even in the city of Guadalaxara, in the Asturias, Biscay, and between St. Sebastian and Pampeluna, the wolves have not only attacked and destroyed cattle, but wounded and devoured several individuals, and we fear have left the impress of hydrophobia behind them.

In truth, hydrophobia in warm climates is very infrequent. The disease was unknown in Jamaica for forty years, and in Turkey and the East, where dogs are sometimes found in considerable numbers, hydrophobia is rare and almost unknown. These dogs herd together, and repose in groups in the streets: the Turk walks deliberately out of his way to avoid them, and not to rouse them from their slumbers, acting literally on the trite precept—"Let sleeping dogs lie." In fact intense heat and intense cold produce nearly similar effects. It is

the *extent* of the extremes which constitutes the cause—a sudden transition in temperature either from heat to cold, or cold to heat, or long abstinence, or an irregular supply of food, seem to be the most likely causes which give rise to the symptoms of hydrophobia which supervene; among these causes may certainly be classed the entire absence or irregular supply of water: to these have been added putrid aliment, want of perspiration, and worm under the tongue.*

The following melancholy portrait of the progress of the disease after the inoculation of the virus by the rabid animal, is taken from the original MS., which was presented to us by the brother of the officer who has described it, (now dead.) It is especially interesting from the minute and circumstantial detail which characterizes it:

"*Royal Barracks, Dublin,*
"15*th August*, 1816.

"On Sunday, the 14th instant, I sent an account of a melancholy event which happened to an excellent and much lamented young man, and

* We need scarcely state that what has been called the *worm* under the tongue is merely a tendinous ligament. It has been mentioned that "worming" of dogs prevents the ability to bite, though it does not ward off the attack of "rabies canina," but the assertion is altogether groundless, for it does neither.

brother officer, who died of hydrophobia a few days ago. I now send you some particulars of this sad event, what I myself witnessed, together with what I learned from my poor friend, who is now no more. About three months ago a large French dog, belonging to one of our officers, was observed to grow uncommonly savage, and bite at every dog he met in the streets; this change of temper in the animal was attributed by his master (who was very fond of him) to his having eaten a quantity of meat, which had been given to him highly seasoned with pepper, &c.: however, towards the evening of the day, on which the change in the animal was perceived, he became at intervals quite outrageous, and bit his master and two more officers who happened to be in the room; but notwithstanding his master was inclined to think it was done more in rude play than any thing else; consequently no measure was taken to secure him. That evening I saw the dog, and thought him uncommonly ruffled; when I attempted to caress him, and was patting him on the back, he turned at me and savagely growled, although he used to know me well. The next day he was more violent, and furiously bit at several dogs who crossed his way; still, unfortunately, no measure was taken to secure him, his master not supposing any thing to be the matter with him. In the evening of the

second day the dog was lying in his master's room, perfectly tranquil, when this unfortunate young man, who has fallen the victim, entered the room: he had been in it sometime before the dog took any notice of him; however, he suddenly made a spring at his master, seized him by the shoulder and pulled him to the ground, and tore his arm down from the shoulder. He was with difficulty taken off him. A serjeant of the regiment happened to enter the room about this time on duty: the dog seized the serjeant by the leg, and tore away a considerable quantity of flesh; he also bit two of our soldiers, one by the nose, and the other through the hand. Still the animal was allowed to live, and even slept in his master's room, by his bed-side, and licked his face repeatedly. The following morning the master of the dog began to feel some alarm, and asked me to go with him and look at him: I advised him strongly to shoot him—he agreed: as we were going to the spot where the dog was, he bolted out and ran through the barracks, snapping at every thing which came in his way. He passed close to me, I called him, but he did not notice me. He bit a child and a number of dogs, and run through the streets of Dublin. The last person he bit at was a man, who fortunately had a hammer in his hand, with which he struck the dog on the head and killed him, as

the animal was in the act of attempting to seize him by the face. The tongue of the dog was immediately cut out by a physician on the spot, who, on examination, pronounced the animal to have been in an advanced stage of hydrophobia. None of the officers or soldiers who had been bitten knew of the decision of the physician, nor did they know that any thing which had been bitten had suffered from the bite in any shape: however, the child died almost immediately, and three of the dogs died about six weeks after they had been bitten, exhibiting the strongest symptoms of hydrophobia. All this had been kept; therefore no cause of alarm from report could have excited hydrophobic feelings in the unfortunate young man who has fallen the sacrifice. On the contrary, he was in high spirits, and applied for leave of absence to go and see his friends in Worcestershire, as he had some intention of being married. Leave was granted to him, thinking it might divert his attention, and he left us in the same high spirits; during his absence all was forgotten, and those remaining who had also been bitten, (though not quite so bad) recovered their usual spirits. The period of leave which had been granted to the young man having expired, he set out from his father's house, near Worcester, a few days ago in perfect health, to rejoin his regiment; (this he told

me himself a few hours before he died.) When he got to Birmingham, he said he had a curious taste in his mouth, which made him not relish his breakfast as usual: however it gave him no alarm, nor did he again think of it till he got to Shrewsbury, when he found he had a great disrelish both for eating and drinking when it was put before him, although a great inclination to eat and drink when it was not before him. This he could not account for, he said, but still did not feel any alarm until he called for porter, being very thirsty. When it was brought to him he put it to his mouth, but the moment he got a mouthful he dashed the glass from his lips, and spit the porter all over the table, and I believe over the passengers, who rose from the table, and said he was mad. This extraordinary feeling, he said, of not being able to drink, though he wished, caused him some uneasiness, but he still wished to believe it was the effect of a sore throat he had got; and under this idea comforted himself. He proceeded by the coach to Holyhead, and was ruminating what could be the cause of this strange feeling, when the coach passed a small lake of water, the surface of which being a little agitated by the wind, he immediately shuddered at the sight of it, he added, with a kind of horror he could not express, and hid his face with his hands, and for the *first time*

the dreadful idea of Hydrophobia struck him. When he arrived at Holyhead he wished to wash before dinner, and called for water: when it was brought to him, and in the act of putting it to his face, he screamed violently, and threw the water about the room, and was convulsed for some time: the servant ran out dreadfully alarmed. He then tried to clean his teeth, but could not get the brush into his mouth, because there was water upon it. The packet by this time was ready to sail, and he embarked. Poor fellow! while he was relating this to me we were sitting together by the fireside, he having just landed from Holyhead, which place he sailed from the night before, consequently this was the third day only since his attack at Shrewsbury. He had then been ashore about an hour or two, and had ordered a coach and drove up to the barracks. Before he began to tell me, on his arrival, of the symptoms he had experienced on his journey, (which I have been relating) he greeted me on our first meeting with—'*How are you, my dear fellow —here I am at last returned, but I fear with Hydrophobia.*" I affected to laugh at it, but was much shocked, and said it was only fancy: he replied it could not be fancy, for he thought he should have died coming on shore in the boat, he was so much affected at the sight of the water; they were obliged to cover him to prevent his seeing

it while in the boat; he also observed, that if he had remained on board of ship *one* day longer he felt convinced that he should have died mad. However I was still inclined to think that there might be a good deal of imagination in it, and endeavoured to persuade him so, although I cannot describe the horror I felt at hearing him relate what he suffered at intervals since he left Shrewsbury. In the course of our conversation some dogs in the barrack-yard began to bark; he sprung up suddenly from his chair and looked over my shoulder, and said in a hurried voice '*Dogs!*'—If I were to live a thousand years I should never forget that moment. Something struck me so forcibly that he would die, that I was afraid to meet his eyes, for fear he might discover signs of alarm in me. He was in the act of peeling an orange, which we had persuaded him to try to eat, he not having taken either meat or drink since he spit out the porter at Shrewsbury. As soon as he had peeled it, and put a little in his mouth and felt the liquid, he became greatly convulsed, and gave a kind of inward scream, and was obliged to spit out the orange. As soon as he recovered himself, he burst into a fit of laughter, and said—'There, was not that like a dog barking?' A physician arrived soon after, who is very eminent in Dublin. As soon as he entered the room, this poor young man apolo-

gized to him for having given him the trouble to come, as he thought at first he had got hydrophobia, but he belived now it was only a sore throat he had got, therefore would not trouble him further; so glad was he to catch at anything, poor fellow! which might give hopes of saving his life. We were all anxious to hear the decision of the physician after he came out of the room, who, on being asked, pronounced his death inevitable. It is unnecessary to describe our feelings on this melancholy occasion,—to know that the poor fellow with whom we were conversing, to all appearance in perfect health and high spirits, could not live many hours, was deeply distressing. The physician said he was in an advanced stage of hydrophobia, and that bleeding him copiously, in order that he might die easy, was the only thing that could be done for him. I remained with him some time, poor fellow! talking and laughing (though completely forced on my part) about indifferent subjects. On leaving him, I asked him when he intended to dine at the mess; he could not dine with us that day, but he thought he should be able in a day or two, when his sore throat was better. After he was bled, he said he felt much relieved, and thought he should sleep well, and hoped he should be able to drink water by the next morning. Sometime after, in the course of the evening, he at intervals

appeared confused and rather wild, and told one of our officers to get out of his way, or he would bite him; but he afterwards became more tranquil, and sent his compliments to one of the married ladies of the regiment for a prayer-book, but begged that it might not be mentioned, or he should be laughed at. About midnight he became very violent, so that three men could scarcely hold him: he afterwards recovered a little, and fell into a kind of slumber, which was disturbed by his springing up now and then, and crying out—'Do you hear the dogs?' in a quick voice: he also fancied at times he barked like a dog. He requested he might be alone a little about one o'clock in the morning, and his servant only remaining in the room; when, in about ten minutes afterwards, he looked up at his servant quite calm and collected, (who sat by his bed-side) and said—'he regretted his mother and sisters were not present.' He then prayed for a short time, and turned himself round, buried his face in the pillow, and expired without a groan. Such was the melancholy end of one of the *finest* and *best* young men, I believe, in his Majesty's service! His remains were interred the day before yesterday with military honours, attended by the whole of the Rifle Brigade, and every officer in and about the garrison of Dublin, headed by the Generals, who

all wore mourning. Our surgeon said if the poor fellow had not been bled he would have died raging mad. I am afraid you will find this a confused account.

" The name of my poor friend was Amphlett, a lieutenant in our regiment. His friends reside near Worcester.

" There are three officers and three soldiers also of our regiment who were bitten ; they are rather in bad spirits on this melancholy occasion.

" R—— F——

" Lieut. 3d Rifle Brigade."

" We have erected a monument to the memory of poor Amphlett in the church where his remains are laid. Poor fellow ! "

CHAPTER II.

NATURE OF THE DISEASE—VARIOUS OPINIONS, THAT OF TROLLIET IN PARTICULAR—— TETANUS NOT HYDROPHOBIA—CATALOGUE OF REMEDIES IN HYDROPHOBIA.

In our prefatory remarks we have ridiculed the idea of hydrophobia being a creature of the imagination, the ignis fatuus of the brain; those who thus suppose it have imbibed the full spirit of Berkeley's Idealism, admirably ridiculed in a pamphlet written against his Tar water proposed as a species of catholicon, in which the writer charges the bishop in the following strain of irony: "Thus in your younger days, my Lord, you made the surprising discovery of the unreality of matter; and now in your riper age you have undertaken to prove the reality of a universal remedy: an attempt to talk men out of their reason did of right belong to that author who had first tried to persuade them out of their senses." This disease cannot be reasonably supposed imagination in the dog in which in the first instance it had a spontaneous origin. Horses and cattle bitten by a rabid animal can

scarcely be supposed capable of exercising this faculty of the mind. Vaughan cites the case of an infant in the cradle that being bit by a rabid animal died of hydrophobia. The sentiment of fear, says Trolliet, was a stranger to Girardet, who had forgotten the circumstance of his having been bit by a little dog long before, though he perished the victim of hydrophobia. Out of twenty-three persons bit by the same rabid wolf, thirteen died of hydrophobia, as well as several cows bitten at the same time, and all after the lapse of a few months. Those who sunk under the disease were bitten immediately on the surface of the body, while those who survived were bitten through their clothes and the morbific virus had thus been intercepted and stayed: all the victims of hydrophobia presented the same train of symptoms, and all of them the same fatal termination; notwithstanding what we think the clearest evidence to the contrary, volumes, mirabile dictu! have been written to prove that it is a shadowy phantom of the mind, and that all the while we have been beating the air; were such eccentric speculations to gain ground, their obvious tendency would be to paralyze all future inquiries into the nature of the disease and means of cure. A surgeon of Brighton, with a most criminal foolhardiness, suffered a mad dog to bite him, and since he has providentially

escaped from becoming a victim of the most rash and unwarrantable act in the annals of modern science, he, seriatim, invites the public to receive it as proof positive that there is no such thing as hydrophobia. Now notwithstanding all he has written on the subject, and supposing the dog to have been actually rabid, it proves nothing but what had been often proved before, namely, that every bite of a mad dog is not necessarily followed by hydrophobia—all this will depend on the stage of disease in the animal, the morbid virus must be mature, and the nature of the parts bitten will determine the fatal action of its powers, while the idiosyncrasy of the individual will doubtless have its due influence. The following curious instance of hydrophobia was communicated to us by a clergyman of the Church of England in whose parish the circumstance happened—the features of the case cannot be easily reconciled with the extraordinary assumption that it is an ideal disease. The Rev. Mr. S— of B— was personally conversant with the particulars. Mrs. Marshall, then five months advanced in pregnancy, was bit by a mad dog, as were a horse, a dog, and a sow in farrow—the dog and horse became mad and died—fears were then entertained for Mrs.——. She went to the sea side, and took the Ormskirk medicine, but all to no purpose. Several weeks after the birth of the child,

the mother took the disease, and fell the victim of hydrophobia; the offspring, a son, still lives, is now more than twenty years old, and has been ever free from any taint of this dread malady.—It is a curious circumstance that the sow in farrow afforded an analogous case; the animal died of hydrophobia after she had littered, but though the young were preserved for some time, they gave no indications of the disease, but were of course finally destroyed. The following is an interesting corroboration of the latter circumstance, and all concur to prove very clearly the extreme absurdity of considering the disease a hallucination, or idealism of the mind. A sow in farrow, belonging to Mr S. Duffield, of Woodham Ferris, Essex, was bitten by a mad dog in December, 1826. The sow was preserved, but tied up for fear of accident. In January following she had a litter of pigs, and they and the sow seemed to be doing well until the evening of the 24th, when she refused her food and on the following day the symptoms of hydrophobia were decidedly manifested—the pigs did not seem the least affected, though it was deemed prudent to destroy them all together. These cases evidently prove that the *milk*, whether in the human or brute creation, does not taint the offspring.

That hydrophobia is a disease dependent on the inoculation into the system of a specific morbi

virus there seems no cause to doubt, but, on the contrary, every reason to believe. Respecting its peculiar nature, however, we have no more tangible evidence than we possess of that of malaria or of contagion. Desault imagined it to consist in the production of worms, Sauvages in an alkaline and volatile igneous matter, Lecanus in a principle analogous to phosphorus, &c.—but these dogmas are become obsolete long ago. In the numerous cases of hydrophobia which were under the care of M. Trolliet, in the Hotel Dieu, at Lyons, the post mortem appearances were remarkably uniform in those phenomena which seem to fix clearly the seat of the disease, or at least the proximate source of the hydrophobic virus. The vascular structure of the brain and the organs of respiration afford uniform and constant evidence of derangement, while the other phenomena that are presented are only occasional or equivocal, and afford no direct evidence that they belong as a consequence to this disease. The trachea is not always inflamed, and the larynx seldom. The inflammatory appearances which supervene vary in degree in different individuals, and a frothy mucus is generally found present in the seat of inflammation, sometimes in the larynx, still oftener in the trachea. The cellular substance of the lungs and its serous membrane are not subject to any alteration—a frothy mucus is

generally found in the bronchiæ, and may even be expressed from the air cells and tissue of the lungs. This frothy matter is the *product* of the inflamed mucous membrane from which it is expelled. The inflammation of the lungs therefore is specific, and arises from the virus of rabies, in which we find analogical arguments in the case of the variolid eruption proceeding from the virus of small pox—according to the interesting view sustained by M. Trolliet, and in our humble apprehension the most satisfactory and conclusive we have yet seen; the *frothy matter* expelled by the contractile powers of expiration is the true *vehicle* of the virus of hydrophobia, and not the saliva, because the salivary glands present no vestige of inflammation whatever; on the other hand the bronchiæ are inflamed—are the seat of pain, and secrete diseased matter,—the analogies here are certainly complete, as in small pox and syphilis—the inflamed portions supply the specific virus of these diseases. We think it worthy of remark that this author found *air* in the cavities of the heart and the lungs. In the case of Guyot, when the pectoral aorta was opened a number of air bubbles escaped along with the efflux of the blood: we do not by any means consider this to have been common air, but in all probability the aerial virus. The blood was black and liquid—on being exposed to air it did not

coagulate, and exhibited an *oily* appearance. Mr. Richard Hughes, a surgeon of Stafford, informed us that he had found in the blood after death, on the dissection of a body, the victim of arsenic, particles having much the appearance of oil floating in it; we possess a description of the case, which was anterior to a similar phenomenon observed and announced by Dr. Traill, of Liverpool. This too is one that would plead for the view which sustains the introduction into the system of a morbid virus; when blood was taken from the veins during the disease it coagulated without separating, as is usual, into *crassamentum* and *serum*. The liquid black blood found in the veins of the chest and neck, and the auricles and ventricles of the heart, &c., show a complete derangement of the whole circulation, and a morbid change in the blood, the inflammation of the pia-mater and other portions of the brain may be fairly ascribed to the morbid action of the blood with which they were sometimes found completely gorged. The following is a case of hydrophobia recorded by Dr. A. T. Thomson :— A boy was bit by a rabid cat in the hand; the wounds, three in number, were excised the following day by Mr. Gaskell, and the incisions were healed. In rather less than three weeks afterwards the lad was seized with symptoms of hydrophobia, and was attended by Mr. G. and Dr. T. who

employed opiate frictions externally and prussic acid internally with apparent but deceitful advantage, as he died in three days. The most interesting part of the case relates to the post mortem appearance. The whole *of the cellular membrane between the theca vertebralis* and the *parietes* of the canal were loaded with suffused blood, which in several places lay in black *coagula.* Six inches of the chord, from the third cervical vertebra to the fifth dorsal, being removed, and the dura mater slit up, the vessels of the spinal chord were seen turgid, particularly those that accompany the dorsal veins. There was some appearance of inflammation about the base of the brain, and the larynx and pharynx displayed a slight blush. We have witnessed the dissection of two mad dogs, and the post mortem appearances in them corroborate in a remarkable manner those discovered by Trolliet in the dissection of the human subject. In one the pia mater was inflamed, the trachea in both, as well as the bronchiæ, and the blood was black and of a liquid consistency in the region of the heart.

Inflammation had been discovered by Fothergill and Parry, and Lalouette, in the trachea and and larynx; Fothergill, from this circumstance, was induced to consider hydrophobia as a case of spasmodic angina; and Dr. Parry considered that

the superior portion of the trachea was that primarily affected. Lalouette, in addition to these, found the frothy matter, so completely established by Trolliet, not only in these but also in the pharynx and large divisions of the bronchiæ. It seems therefore fairly inferential from all the phenomena of the disease that a morbid virus is infused into the wound inflicted by a rabid animal, and the system inoculated with it in this manner. In process of time the absorbents introduce it into the circulation, and rankling in the veins, the blood becomes eventually morbidly deranged, and its vitality fatally diseased—the avenues of life are besieged, the enemy is in the citadel, for "in the blood is the life thereof"—the blood arrived in the process of circulation at the lungs, evolves the morbific virus from the mucous membrane of the bronchiæ, exhibited under the form of frothy matter, and this expelled from the air passages by convulsive or spasmodic action, follows the infliction of the wound. Such seems to be the routine, and the only difficulty in the matter seems to be that connected with the lengthened period which has occasionally elapsed between the bite of the rabid animal and the evolution of the symptoms of hydrophobia, since it cannot be doubted that the infusion of a morbid virus into the blood would poison the springs of life. But it will

be perceived that this is declared sooner or later as the parts wounded are more or less vital, or nearer to or more remote from the organs directly or immediately concerned in the mechanism of life. Besides, contingencies or peculiar idiosyncrasies of constitution, or the degree of maturity in the virus of the rabies will controul or modify the periods of evolution—once unfolded and the disease proceeds with an accelerated ratio to a fatal termination. That there is a most subtile morbid virus in the case is, we think, palpable, and when brought in contact with an abraded surface, the mouths of the absorbents and nervous fibrillæ are ready to receive it—even in cases of the inoculation of the system by the virus of syphilis and small pox, the periods in which the disease is declared, vary. The oldest opinion was, as far as the blood is concerned, somewhat similar to that now propounded, while a more recent one ascribes the diseased action to the local effects produced by the bite, and its propagation through the whole nervous system. Trolliet considers that this virus has a specific and peculiar action on the organs of respiration and the brain; just as the variolid virus exercises a determinate action on the skin where it is manifested by absorption—the lympathic vessels absorb it, and the blood necessarily becomes infected. We confess that to us it seems most likely that the inflammation, developed

in the cerebral surface, is the consequence of a sympathetic and secondary rather than a direct action of this poison, and the diseased and deranged state of the circulation will fully account for it. We have mentioned facts which clearly prove the absence of this morbid material from the milk. In truth animal secretions seem void of danger in this respect, such as saliva and others, and the flesh of the rabid animal has been eaten safely. Even though the blood should be proved to be so far innocuous as not to contain the hydrophobic poison as such, still, if it contain its elements, these may subsequently form a junction, and the chemical combination be formed at the surface of the bronchiæ when the blood is brought in contact, as in common cases it is depurated by evolving its carbon, which, uniting chemically with the oxygen of the inspired air, forms carbonic acid gas—now it is quite probable that an analogous combination with one of the elements of this virus, secreted from the blood, may take place in the air cells, the constituents of the atmosphere, or one of them affording the chemical residue necessary to the constitution of the hydrophobic poison.

It ought not to be forgotten that the saliva in all probability powerfully promotes the combination of oxygen, and therefore may change this specific virus morbidly before its transfer by the bite of the rabid

animal. Besides it has recently been discovered that the saliva contains a sulpho-cyanate; now any thing coming from the lungs that would decompose it, might promptly produce a virulent poison. We have not adverted to Marochetti's view of the case, since the sublingual pustules, though diligently sought for both in France and in England, (in two cases particularly, at Birmingham) have never been found. The following is the account of Marochetti's assumed discovery, extracted from the *Revue Encyclopèdique*, for June, 1823: "M. Marochetti chirurgien de l'hôpital "de Moscou se trouvant en ukraine en 1813, fut "consultè par quinze personnes qui avaient ètè "mordues par un chien enragé." The following is described as the method pursued by a peasant of that district: "Le Paysan donna aux quatorze "malades confiés a ses soins une forte décoction "de sumac (Rhus folio ulmi *Tournef.* Rhus "coriaria *Lin.)* et des fleurs du *genista lutæ* "*tinctoriæ;* il examinait deux fois par jour le "dessous de la langue, où se forment ordinaire-"ment de petits boutons, renfermant selon lui "le venin de la rage. Aussitot que ces petits "boutons paraissaient, le paysan les ouvrait et "les cautérisait avec un fer rouge. Le malade se "gargarisait ensuite avec la decoction de *genista.*" These fourteen thus treated, it appears by Maro-

chetti's account, survived, while the one treated in the ordinary way died. The pustules appear generally from three to nine days after the individual has been bitten, and our author tells us that nineteen cases out of twenty-six in his own practice, evinced the presence of these pustules. The tongue must be carefully examined every day, and until they do appear no danger is to be apprehended.

All those cases of hydrophobia said to have been cured appear extremely questionable, such as that of Bardsley, and in the East—and perhaps we may add those that have been described as instances of *spontaneous hydrophobia* in man. We doubt not that cases of modified *Tetanus* have often been described as hydrophobia, but though tetanic symptoms may be an accompaniment of the disease, it by no means follows that hydrophobia is tetanus. According to Dr. Moseley, "canine madness is a mixture, or rather a succession of hysterical and tetanic affections." A gardener is mentioned by Boccius who died of "hydrophobia," in consequence of a scratch from the talons of an irritated cock. This could be no other than a case of *Tetanus*. We once witnessed an example of protracted tetanus,—*Trismus opisthotonos*, the consequence of a wound inflicted on the left *infra orbital nerve*, by a turkey

cock; the muscles of the *right* side of the face were consequently paralyzed, accompanied by tetanus: during sleep the teeth separated a little, but with this exception they were as firmly locked as a vice: a combination of opium and arsenic relieved the spasms, which were dreadful. We tried the effects of Galvanism; which fortunately caused a temporary separation of the teeth, which always remained open during the application of the electrical stimuli. The individual recovered.

We read also of "hydrophobia" being determined by the introduction of certain substances into the stomach. Schmidel mentions the case of one who became "hydrophobic" from having eaten a great quantity of beech masts; and Dr. Harles, of Erlangen, relates another occasioned by eating a little of the thorn apple. *(Datura stramonium.)* There can scarcely remain the shadow of a doubt but these cases were tetanic, since we know that one peculiar and characteristic feature of Strychnia, the active principle of *Strychnos nux vomica*, is to produce tetanus. The following very extraordinary case of epilepsy is recorded by Trolliet, and is remarkable for presenting several of the features occasionally met with in hydrophobia:—

"Il existe en ce moment á L' Hôtel-Dieu, dans
"l' une des salles confiées à mes soins une fille
"agèe de 27 ans, epileptique depuis six ans,

" dont les accès ont été si violens quils étoient " accompagnés de convulsions, d' *envie de mordre* " *(elle a mordue plusieurs personnes)* de cris, " d' *horreur pour les boissons*, de perte de con- " noissance, et de *salive écumeuse*, *&c.*"

It may not be deemed out of place here to advert to Mr. Banford's (of Bath) portable voltaic instrument, which, worn upon the person, has stayed epilepsy, since we happen to know from a medical gentleman, that it has certainly proved successful in his practice. A thin plate of zinc is applied to the nape of the neck, the skin being slightly abraded, and connected by means of a metallic wire, with a similar plate of silver affixed to the knee. The wire, which passes down in the direction of the spinal cord, often breaks, an accident easily obviated by using spiral metallic cord either in whole or in part; and a thin plate of sponge preserved humid, and interposed between the skin and each voltaic plate would effect and support the contact. That epilepsy is connected with a derangement of the nervous system, seems highly probable, and the experiments of Dr. Wilson Phillip, and Mr. Broughton seem to warrant its successful application. In considering the cases stated to be hydrophobia and vaunted as cured, which, after all, are like " angels' visits, few and far between," one cannot but feel extremely scep-

tical on the subject, and doubt whether they were indeed hydrophobia. We think not: since these boasted remedies have failed in innumerable cases, and not only have they failed to suspend the fatality of the disease, but even a moment's respite from suffering has not been obtained by them.

The remedies prescribed have been very numerous, and present a most formidable array. The *Theriacas*, *Radix mungo*, and *Pulvis antilyssus*,* with *Alyssum*, or Madwort, may be classed together. The *Ormskirk medicine* has had its ephemeral celebrity, and even in more recent times been the quicksand of disappointed hope. This medicine is merely a compound of chalk, alum, Armenian bole, and Elecampane root. It is but right that this deception should be unmasked, that others may not be persuaded to trust to the broken reed. We are inclined to rely as little on Marochetti's *Rhus coriaria*, and *Genista*, the last of which he recommends to be taken four times a day, either in decoction, or the plant in powder—a grain being the dose; and Marochetti informs us that not only were those in his own immediate treatment completely cured, but he assures us that three years after he saw the fourteen who had been treated by the peasant, in

* *Lichen cinereus terrestris*, or ash coloured ground liverwort, recommended by Mead.

perfect health. To the former class of remedies we may add, as equally inefficient and absurd, the powder of calcined oyster shells, calcined crawfish, cantharides, the sponge or bedeguar gall of the Dog rose (Rosa canina,) which is merely an excrescence formed by the *Cynips Rosæ:* also the liver of the wolf, and the liver and dried blood of the mad dog. Pliny says, in reference to the latter, that the liver of the mad dog should be eaten raw rather than boiled; and Dr. Mead tells us that he saw a poor boy die mad who had greedily devoured almost the whole of it. The ashes of the river crawfish were duly prepared, *secundum artem*, by burning the fish alive upon a copperplate, with a fire made of the cuttings or twigs of the white briar, or tendrils of the white vine, after the rising of the Dog star, and when the sun was in Leo, and in the tenth day of the moon. The remedy of cantharides was formed by infusing the flies in buttermilk for twenty-four hours, and drying them, they were then subsequently made up with flour of lentils and wine, and divided into troches of a scruple each. Considering the disease as being intimately connected with the derangement of the nervous system, antispasmodics and sedatives have been usually employed and a combination of musk and opium generally depended on. These, as well as

cinnabar, calomel, ammonia, camphor, cold bathing, belladonna, nux vomica, and stramonium have all been administered; and on the other hand, various kinds of pepper, cajeput oil, tin, copper, and iron, and in later periods bark; also hydrocyanic (Prussic) acid, vinegar, solution of chlorine, sulphuretted hydrogen, acetate of lead, and arsenic; also bleeding to syncope, and injections of tepid water and opium into the veins. The Alisma Plantago, or water plantain, has also been lauded as a specific in a disease that knows as yet of none, and mercurial or antimonial frictions have also been recommended and used. Dr. Jenner recommended an unguent of tartar emetic to be applied by way of friction. That the cuticular surface is morbidly affected by sympathy there can be no doubt, and a new excitement here might operate as a valuable reaction in the system. Dr. Jenner informs us that "a patient applied the ointment at night and had eruptions next morning, which was within a space of twelve hours," (p. 54); and "in the case of a lady, where two parts of the tartar emetic, and one of simple cerate were used, eruptions appeared in a few hours." (p. 54.) In order to secure its more prompt action, Dr. Jenner advises it to be applied to the thin cuticle behind the ear as well as other parts.

This glance at the multifarious substances em-

ployed in this formidable and terrific disease tends to show how difficult it is to maintain a contest with this giant disease, or grapple with its strength. Like Samson, and "the seven green withs," all are useless, and as "a thread of tow is broken when it touches the fire;" because the "secret of its strength is not known." Its pathology is a mystery. We need not comment on the *prima facie* questionable nature of the greater part of these remedies. Thus nux vomica contains a principle which gives rise, when exhibited, to tetanic affections, and sulphuretted hydrogen is a fatal septic poison. We have no hesitation in saying, that the medical practitioner is unwarranted in repeating any one of them, except under some extraordinary modification and peculiarity.

CHAPTER III.

RABIES IN THE DOG——TREATMENT OF THE WOUND INFLICTED BY A RABID ANIMAL—EXCISION-—CAUTERY—-PROPHYLACTIC, OR PREVENTION.

We must suppose, contrary to the peremptory statement of Mr. Meynell, and received as a valid conclusion by Dr. Bardsley, that *rabies canina* has a spontaneous origin in the dog. It must begin somewhere, and by reflex reasoning on the principles of cause and effect, we must eventually come to the source in which it originated, multiply the links of cause and effect that have supervened as we may. It is readily allowed that it may have been introduced by the bite of a mad dog into Mr. Meynell's kennel; but though he may have been able always to trace it to this extraneous cause, and that with *his* dogs it never originated from hot weather, putrid provisions, or the usually admitted predisposing causes of the disease,* the question

* The rabies canina was manifested in Jamaica during 1783, and that island had been entirely exempt from it for

still recurs, who bit the biter? It cannot be an uncaused effect. That the disease must have a spontaneous origin in some animals, (though not in man) as the dog, wolf, cat, fox, &c. seems palpable to the eye of reason. This view of it, however, would render nugatory Dr. Bardsley's fanciful idea of quarantine. The period which elapses from the infliction of the bite of an animal labouring under hydrophobia, in the case of the dog, Mr. Trevelyan states, from personal observation, to be from a few days to three weeks, and that seven days may be considered the usual average.* He has had not less than fifty couples of hounds that went mad, and all attempts to cure them proved abortive. The Ormskirk remedy was given in doses innumerable," "worming, sea bathing, copious bleedings, and mercurial medicines," in

fifty years preceding this period. It has no existence in Egypt, and is rare in the West India Islands, and other tropical lands, as well as the Cape of Good Hope; South Africa, according to Mr. Barrow is also without canine rabies. In Constantinople, where dogs are suffered to roam *ad libitum*, and their chief food is putrid aliment, the *rabies canina* is almost unknown. According to Volney it is entirely so in Egypt and Syria.

* M. Meynell states the period of evolution to be between a month and six weeks; a fortnight being the shortest, and eight months the longest period after the bite.

various forms and quantities, in like manner proved useless. Mr. Trevelyan has seen the jaw of the rabid dog drop during the disease, independent altogether of the operation of worming; we have personally witnessed this circumstance, in an instance of the "sullen madness" in this animal, in which the lower jaw fell and seemed paralyzed. It followed indeed the administration of Iodine, but after all might not have been the necessary sequence.

That many dogs have been considered as mad and destroyed as such, which were perfectly sane, there can be no doubt, and it is to be regretted that this peremptory destruction could not be stayed; since, if sane, the proof would alleviate the mental inquietude of the person who has been bitten, and form a quietus for his fears; and if really mad, many experiments deeply interesting to suffering humanity might be made, and even a specific be obtained through such a channel: if a multitude of dogs bit by a rabid animal were severally tied up, and made perfectly secure, there can be little doubt that a preventive would be eventually found, and curative means discovered. On the other hand, the terror which the idea of a mad dog universally inspires, makes every one on the alert for his prompt destruction. To

allow the animal to live a moment hazards the fate of numbers, and is a reasonable apology for the decisive act.

In the early stages of the rabies canina the dog seems anxious for concealment. He seldom or never barks, and his looks are sad, dull, and heavy, —he snarls at strangers, yet so far fawns on his owner. Eventually the dog rejects his food and drink; his ears and tail hang down, and he seems to wish for respite and repose. By and by the animal appears to breathe heavily and quickly, discharges a frothy saliva from his mouth, and his tongue hangs out; he appears half asleep, flies suddenly at those he encounters, and runs forward in a somewhat serpentine manner. These symptoms increase: the dog at length knows not his master—his eyes are dim and thick, and discharge much serous matter—the tongue changes to a lead colour; he is then faint and weak, and often falls down; rising up he attempts to fly at objects, and becomes mad and furious. This is the last stage of the disease in the dog, seldom lasting above thirty hours, and, of necessity, the nearer the animal approximates this period of the rabies, the more powerful is the virus, and the more prompt and decided are its effects. Other dogs seem aware of the danger of their rabid compeer, and instinctively avoid his approach; the bark

indeed of a rabid dog seems to impart sufficient warning, for it is essentially altered, and becomes hoarse and hollow; all other dogs, it is said, will shun such a one even before the rabies is declared, and run away with expressions of horror.

We have personally witnessed in the canine species both the "biting" and "sullen" madness so admirably and accurately described by the author of the article "Dog," in "Rees' Cyclopædia," and have painfully watched both species of the disease through all the grades of their fatality. In these two cases of canine madness we made a number of experiments, which it may be interesting to detail, and it is something to know what has been already done. That which evinced evidence of the "sullen madness" was the consequence of a bite from one characterised by the more violent form of the disease, the "biting madness." We were anxious in these inquiries to ascertain the effects of some of the more violent chemical agents. Iodine in tincture, together with both morphia and emetine were altogether inert and unproductive of the least determinate action or alteration of the disease. The cathartic oil of the *croton tiglium* introduced by the mouth, as well as enemas of aloes, sulphate of magnesia, &c. were alike inoperative: ice was given to the

animal, and copious bleeding from the nape of the neck, followed by an application to the spot of the actual cautery, under the impression that it might affect the medulla spinalis, &c. These, however, produced no mitigation of the disease, and the dog sunk under it in the usual period without any modification whatever in the symptoms. The poor creature was the picture of sadness and portraiture of melancholy, The other dog exhibited the more violent and terrific phenomena of the "biting madness" with all its wild and savage accompaniments—a spar of wood being placed near, was furiously knawed to fibres, and the voice and the command of the keeper had no controul over its violence; it no longer knew that voice, disregarded his authority, darted on him to the extent of the chain, and tore his coat to fragments—when flesh was thrown to the dog it was rejected and buried under the straw, which littered the animal. The left eye was blighted and discharged serum. In fact the phenomena of the disease were precisely such as have been so well described in Rees' Cyclopædia, and had that author watched with us the progress of the disease from its commencement, it could not have found a more faithful counterpart to the picture he has drawn. In order to form a constant atmosphere of

chlorine for the dog to breathe in the shed in which it was chained, a cup, containing peroxyde of manganese and muriatic acid, was made to float in a basin of warm water—a decided and interesting change soon took place, the dog became quite sane and obedient to his keeper's voice, and the symptoms of *furor* ceased entirely, the paralysis of the eye disappeared, and it no longer discharged serous matter—he took food and lapped milk—but DIED FOUR DAYS AFTER, in all probability more from the effects of the heterogeneous substances he had swallowed in the incipient stage of the disease, such as chips of wood, and stones, &c., which could not find a passage, than from the action of the disease. The probabilities are that the animal would not have outlived, judging from what usually happens, 20 hours from the period when we instituted this experiment, but for the effect of the atmosphere of chlorine. These experiments were made in 1823. Whether it would have eventually triumphed over the disease had the experiment been made in an earlier stage of the rabies, and no obstruction been occasioned by the foreign bodies lodged in the pylorus, may seem problematical to some, but we think it would; one thing is very evident, the progress of the disease was stayed, and the animal's life considerably prolonged, and it must be borne in

mind that the disease was far advanced in its last stage when the experiment was begun.

In Portugal, we are informed, salt is often given to dogs, and it is said with good effect, as a preventive of rabies; and from the fondness evinced by the buffalo, deer, and other animals in a state of nature, for salt, it seems as if the principle was well founded.

It is a matter of prudent precaution in every one not to fondle strange dogs. There is a most reprehensible practice in some people of making pets of snarling puppies, pug dogs, or French poodles, and Italian greyhounds: and the lap of its mistress or a couch of down, clothed sometimes with silk or satin, must be the brute favourite's place of repose. Of all the degrading and contemptible acts exhibited in the drawing-room or the parlour, this is at once the most reprehensible and dangerous, and it is from this source that numerous cases of the ill fated disease have sprung. To recur only to two of no very ancient date, we may advert to the fate of the beautiful and accomplished Mrs. Duff, sister to the Earl of Fife, who was bit in the lip by her lap dog, and whose fascinating and lovely form became the victim of this hideous disease. The other is that of the Duke of Richmond, Governor of the Canadas, who having cut himself with his razor, in the act of shaving,

suffered a favourite dog to lick the wound, and fell a prey to his temerity.

While, therefore, we condemn in the most unequivocal terms all such canine favouritism, as at once disgusting and degrading, and an insult to reason and humanity, we would by no means be understood to forbid a judicious dependence on the services of this grateful and faithful creature; the scene of the St. Bernard speaks volumes in its favour. We have indeed ever been taught to respect the dog as a beautiful emblem and portrait of affectionate and faithful attachment*, and one whose achievements are often worthy of record.

——— "Dogs are honest creatures—
Ne'er fawn on that they love not."

* The following original anecdote of the dog is interesting, and may be deemed sufficiently so to obtain pardon for a digression, and its insertion here: it was communicated to us by a friend. This individual having perceived that frequent depredations were committed in his dove-cote by some animal, was determined, if possible, to destroy it; he therefore stopped up every avenue to the place, except one. On hearing a considerable disturbance in the place, he took his dog and placed him as a sentinel at the hole purposely left open, while he went in to drive out the animal, which he supposed might be a fox or a ferret. The author of the mischief darted through the hole, and the dog as immediately snapt it, and then set up a great cry, followed by continual moaning, which he supposed might have been occasioned by his dog having been bitten by the animal; which eventually escaped and took refuge among some wood near at hand. On removing this wood

When a wound has been inflicted by a rabid animal there is no time to be lost; every moment is full of interest—whatever is done must be done quickly, and preventive measures must be instantly adopted. The means recommended by different individuals have been extremely diversified. The actual cutting out or excision of the parts is that now chiefly relied on. Apollonius, we are told, having been bitten by a rabid dog, ordered another to lick the wound; "ut idem medicus esset qui vulnueus auctor fuerat." Wine, salt water, and soap and water, have all been recommended as lotions. M. Trolliet advises that the part bitten should be repeatedly bathed at the nearest stream or spring; a practice, the efficacy of which we much question, as any diluent under such circumstances might render the virus more absorbable by

he was surprised to find it his own cat, mortally wounded, and he threw it into the canal at the bottom of the yard. The following day the dog kept his kennel, moaning piteously, nor could by any means be enticed to leave it. The position of the dog in the kennel appearing singular—his tail being towards the entrance, he was dragged out, and there the dead cat was found over whose body the piteous lamentation was made. It was afterwards removed to a distance and concealed, and the dog gradually recovered, having for some time rejected all sustenance whatever. These two animals had been brought up together, and were social companions on the same hearth, until companionship had ripened into permanent affection.

the system; and as for frictions, whether antimonial or mercurial, they may be readily dispensed with as useless. There are other methods of treatment that deserve a more detailed notice. The first of these is *excision.* It may happen that the part bitten cannot be excised from its local seat, as for instance the face, &c., or the wound may be near some of the great blood vessels; but should the wound be favourable for excision, the operation must be conducted with great skill and care; the probe having sounded the depth of the woun d,the parts must be completely and judiciously excised: if this important operation be not done by judicious hands, and by a skilful medical practitioner, and there are empirics in the art and science of surgery as in every thing else, it is evident the very act of excision may prove injurious; for if it be incomplete it may induce a false confidence, and should the edge of the scalpel come in contact with the virus, excision may be the means of immersing it deeper in the system. Doubtless excision is one of the most important preventives, but it should not be an insulated and solitary act. Local bleeding and scarification must never be omitted as essential auxiliaries, and there is not a moment to be lost after the bite has been inflicted.

The first thing to be done is to apply a ligature above, and another below the wound; to

this must succeed the cupping glass; if that cannot be obtained, the suction of the wound is extremely adviseable, and we doubt not would be completely effective; nor do we anticipate the slightest danger from sucking the wound, unless in the event of chapped lips, or some excoriation in the mouth and adjoining parts, and were any one near and dear to us unfortunate enough to be bitten by a mad dog, we should not hesitate a moment, considering it to be a most solemn and sacred duty. The instances recorded by Salmuth and Palmerius, of the communication of the disease by kissing the patient, will not at all invalidate our position. These authors play with the marvellous, and are not even worthy of credit, though the subtile effluvia of the poison evolved in respiration, might infuse it into the system, an unfortunate inspiration transporting it into the bronchiæ. We have reasoned on it as a possible case, though we think it altogether incredible in this instance; there are, however, it cannot be denied, a great variety of apparently authentic and well attested cases, wherein the contact of the frothy matter by the skin, without any erasure or abraded surface, has produced hydrophobia. In the German Ephemerides is an instance from the simple contact of the saliva of a rabid animal; another case is supplied by Johan. Matheus

de Gradibus, wherein hydrophobia followed the mere application of the hand to the mouth of the mad dog. Matthiolus cites the cases of two of his own patients, who fell under the disease from the aspersion of the saliva, and Hildanus gives us an instance of hydrophobia following the application of the lips and tongue to part of a garment that had been torn by a rabid animal. Dr. Hamilton and others supply similar cases. If the morbid matter be suffered to *remain in contact* with the cuticular surface, we can very readily believe in its absorption. Thus we have been informed that the naked arm introduced into an oiled silk bag containing carbonic acid gas, will manifest its active absorbent power, for the volume of gas will diminish, and the silk tissue become flaccid. Dr. Deidier made several experiments on dogs during the plague at Marseilles, in 1721 ; when bile and blood taken from patients under the disease were injected into the veins, death with gangrene supervened: a dog which accompanied the surgeons harmlessly and repeatedly during a period of three months, licked up the blood, &c. of patients in whom the disease proved fatal, and afterwards fell a victim to an injection into the vein. The experiments of Prevôst and Dumas might á priori lead us to expect a fatal issue in the transfusion of human blood into that of a dog, but would not certainly account

for gangrene. It proves, however, that such is quite harmless, when merely taken into the stomach, and even the virulent poison of the rattlesnake, it is well known, may be swallowed with impunity. In ancient times the *Psylles* and the *Marses* were expressly and entirely devoted to the task of sucking poisoned wounds, and in the history of our own country we have a brilliant example of female heroism and devotion, mentioned in Hollinshead's Chronicles, of Eleanor, wife of Edward I., having sucked the wound inflicted by a poisoned arrow in her husband's arm. We believe animal poison merely taken into the stomach, would be perfectly innocuous. Mr. Campbell, the South African Missionary, informs us that it is customary among the Hottentots to swallow the serpent's vesicle of poison, as a kind of charm against the effects of the bite ; and the natives of Paraguay simply suck the wound inflicted by venomous serpents, and apply a ligature, superadding tobacco leaves to the surface of the wound. They also make use of medicinal plants, the virtue of which are emetic and sudorific. G—— D—— Esq. tells us that while coursing with his dogs in Devonshire, some years ago, during a hot summer, one of his dogs was bit in the lip by a viper ; it was a favourite animal, and for which sixty

guineas had been refused. He witnessed the circumstance, and, while the dog was held by an assistant, *sucked the wound* for some time: the dog felt no harm whatever, though one bitten the day before by a similar viper (Coluber berus) died in a few hours. Indeed the experiments made by Mangili, of Naples, with the poison of the *Coluber redi*, some years ago, seem to us perfectly conclusive. In the event of sucking the wound, we think it both expedient and advisable that the mouth be previously rinsed with solution of *alum*, followed by olive oil, and after the wound has been sucked the mouth should again be rinsed with solution of chlorine, or dilute nitromuriatic acid; or with Fincham's solution of chloride of lime: after this is done some earthy absorbent should be applied to the wound, such as well-dried chalk or pipe clay. We have seen the former instantly remove the pain and inflammation of the sting of a wasp. These had better precede excision, and it being effected, the wound should be washed with dilute nitromuriatic acid or solution of chlorine, or still better by applying to the wound some cotton wool, impregnated with gaseous chlorine, which is easily obtained by disengaging the gas in a cup, in a manner similar to that already stated, allowing some twigs to rest across the lips of the cup, and spreading a stratum of cotton wool over

them to absorb the evolved gas. We by no means consider excision as a specific preventive, and have already stated a case by Mr. Gaskell, where, though the parts were excised, it was followed by hydrophobia. It is needless to multiply cases; the efficacy of excision must in a great measure depend on its being performed early after the infliction of the wound. In reference to local treatment, Dr. Moseley recommends that the injured part be destroyed by caustic, or cut out. Jesse Foote expresses the same opinion.

As to the actual cautery it is amusing to see the various disputations which have taken place with regard to it: thus the *kind* of metal that should be employed was gravely debated, whether it should be gold, silver, copper, or iron, and then when the actual cautery did not always succeed, and the species of metal was found of no avail, superstition whispered that haply the keys of the church might triumph, and accordingly the keys of St. Peter, St. Hubert, and St. Roch, with a host of others, were tried in turn; and not only has red hot iron been tried, but the inflammation of amadou and gunpowder. It does not appear that the *moxa* so much lauded by Baron Larrey has been put in requisition, but it would in all probability be found as useless and inefficacious as any of the rest. Trolliet considers the actual cautery so

little to be depended on, that he would, and with justice, exclude it altogether; and in all the cases of hydrophobia in the Hôtel Dieu under his charge, the wounds had been seared with the actual cautery. Even in the most skilful hands it is at best an imperfect agent, and insecure: and we are of opinion may, by sealing up the wound, even promote the activity of the poison. It is obvious that its action is merely *superficial*, nor can it be otherwise. That red hot iron would decompose the morbid matter there is no doubt, but we cannot expect its power to penetrate as far as the virus may be reasonably supposed absorbed: other escharotics are in a precisely similar condition, whether *lunar caustic* or *caustic potassa*—all alter and affect the superficies, and do no more, while we should much prefer the wound being allowed to suppurate. Trolliet very properly proscribes mercurial frictions, but gives a decided preference to muriate of antimony, from the promptitude of its action. Dr. Jenner's recommendation of tartar emetic ointment would be still better. Trolliet recommends that the wound should be well washed, and afterwards rubbed with lard; but some agent capable of *decomposing* the morbid matter is an essential prerequisite, and in addition to the plan we have recommended, Jenner's unguent might be effectively employed.

For reasons we have already stated it is not advisable to wash the wound with water, or any liquid that might become an easy solvent for the morbid virus, lest that fluid vehicle should become the means of a more ready inoculation into the system. The wound should not be suffered to heal for several months. The gamekeeper, to whom allusion has already been made, was bitten in the hand, in the act of separating the dog from the one in which rabies canina already raged, and this dog subsequently became rabid; a full proof that the poison was at its maximum of malignity. Three wounds were inflicted by the teeth of the mad dog; we scarified these, and having prepared a mixture of strong nitric and muriatic acids, in order to develope chlorine, the parts were repeatedly sponged twice a day with the mixture for several days, we recommended weak solution of chlorine to be taken occasionally, and a low diet to be rigidly adhered to: the wounds soon granulated and healed kindly. By the application of the nitromuriatic acid the skin became yellow, and was entirely destroyed, but the wounds remained pale and not discoloured by the acid. This individual has remained ever since free from the invasion of hydrophobia, and nine years have elapsed. It is true he went to the sea-side, bathed, and took the Ormskirk re-

medy, *con amore ;* but these have ever been proved altogether useless. There is some interest in this case, though it be solitary and insulated. Nitric, nitrous and nitromuriatic acid, with chlorine simply, and iodine, are the only agents to be depended on, as sufficient for the *actual chemical decomposition* of the poison. We are not certain of the powers of *bromine* in this respect ; but from its extremely poisonous quality we should fear to employ it. As illustrations of the powers of chlorine we may be reminded of the extraordinary properties of the chlorides of lime, and of soda : the disinfecting agents of M. Delabarraque, which have been found so triumphant in contagious diseases, and in the arrest of infection. By the experiments of the Medical expedition, under the direction of Dr. Pariset, to Egypt and Syria, we learn from a letter dated Tripoli, 28th June, 1829, that the chlorides of lime and soda had been completely efficacious in arresting and preventing the contagion of plague ; even the infected clothes of those who had died of the plague, rinsed in chlorides, and subsequently worn by Messrs. Rose, d'Arcet, and others, were found perfectly innocuous ; and the results were altogether so favourable, that these chemical agents promise to extirpate the plague from the earth.

Mr. Abernethy made the following interesting experiment, which though simple is conclusive. He took a portion of vaccine matter, and divided it into four equal parts: two of these were subjected to an atmosphere of chlorine, and the other two kept apart. Four healthy children were inoculated with these separate portions, when it was found that those submitted to the action of the chlorine were inert, while the other two were effective.

That the individual who has been bitten should be careful what food he takes, and the nature of his beverage for a considerable period, seems clear enough: he might also for sometime wear the portable voltaic instrument of Bansford, to which at any rate there can be no reasonable objection; and it may also, on a review of the nature of the disease, be deemed interesting, to encase the body in oiled silk or otherwise, and by this means be enabled to surround the cuticular surface with an atmosphere of chlorine, disengaged in the usual way from a retort, containing its ingredients, the beak of which is inserted into the envelope. We are anxious to employ the entire apparatus of safety, and be secure at all hazards by doubling the means of precaution, though part may be supposed superfluous and redundant. Prevention is not only proverbially but actually better

than cure, and in this conviction we remain its advocate.

Mr. Shearsmith, a surgeon, of Worthing, having read the account of an extraordinary cure in the case of a snake-bite in India, by the exhibition of hartshorn, has published the following analogical treatment in a case of hydrophobia—We give it without comment:—"On the morning of the 19th of May, 1809, a dog in a highly rabid state ran through the village of Findon, five miles from Worthing, and in his progress bit a servant of Mr. Tate, then residing there, who sent him to me as soon as possible after the accident. The patient was a youth about seventeen years of age, and the wound was on the ball of the thumb, presenting the usual ragged edges of bites of that description. I advised him to submit to the excision of the bitten part without loss of time, to which he reluctantly assented, and I set about it immediately. From the application of the knife, and the excitement he was under, he became faint, and I directed a young pupil I had, of only a few months' standing, to take down a bottle (labelled at *that* time *Aqua Ammoniæ Purœ)* for him to smell at; a disposition, however, to complete syncope made me desist for a short period, and I desired my youthful assistant to pour some water into a two-ounce graduated measure on the counter,

and give him to drink. Participating in some degree in the situation of the patient, and his eye catching the word *Aqua*, he instantly poured out nearly the measure full of the volatile solution, instead of water, which the other as instantaneously swallowed. Its effect upon the fauces and œsophagus may be readily imagined, and his convulsive start from the chair, and the agony depicted in his face, for a moment astonished me; but casting my eyes upon the counter, I at once saw what had occurred. *Real* water was now instantly resorted to, of which he drank copiously to cool the fiery qualities of the previous libation, and I finished the operation. He returned home, and except the inconvenience he felt on the score of deglutition, mastication, &c. for a few days, went on well, requiring merely a little aperient medicine; the wound healed kindly and rapidly, and no symptom of hydrophobia was the result. I have detailed the above case with a strict regard to truth, and without pretending to account for the *modus operandi* of the medicine, or venturing to recommend it undiluted, and in so extraordinary a dose."

CHAPTER IV.

PHENOMENA OF DECLARED HYDROPHOBIA——TREATMENT OF THE DISEASE—CURATIVE—CONCLUSION.

We have in a former chapter given a picture of this fearful malady in its progress and issue as sketched with a faithful pencil by the patient's friend. M. Trolliet considers that hydrophobia is seldom developed before the eighth day subsequent to the injury being received, though there are instances wherein the rabies has been manifested the day following—sometimes the dormant period extends to six months.—Salmuth has quoted several cases of hydrophobia taking place at the period of eighteen or nineteen years. Morgagni gives a case from the German Ephemerides of the virus having been dormant for twenty years, but the circumstances are loose, and any thing but circumstantial; and to this is added another from Alzaharavius of forty years interval; but all these are at second hand, and from sources unworthy of credit, especially the Arabian authority. The predisposing causes, which accelerate the symptoms

of rabies, are exposure to the influence of the sun—any sudden or violent emotion of the mind—depression of spirits—an injury on the wound, of which Trolliet gives one decided instance; these, with some peculiar idiosyncrasy, may be considered as accelerating causes towards the evolution of the hydrophobic phenomena. When the disease is declared, the unhappy patient exhibits timidity conjoined with much nervous sensibility: fatigue is attendant on any exertion, and there is continued lassitude—the animal spirits suffer much in terrible depression together with extreme sadness, as if sinking under hopeless calamity—the intellect and senses preserve an acute and vivid vigour; sometimes in addition to the dread of water there is also that of light and fresh air, so that even the curtains cannot be stirred—the reflection of a mirror excites pain, and gives rise to convulsive spasms—delirium is only occasional and *satyriasis* was only observed in one of the cases wherein the *alisma plantago* was administered. Though Trolliet did not perceive in his patients any tendency to bite, it is a symptom frequently found as an accompaniment; in the case we have given in detail there seemed an involuntary feeling and tendency of this kind. Hydrophobia, or a dread of water or other liquids, we believe, notwithstanding some vague assertions to the contrary,

is an *invariable* symptom, though this feature is seldom perceived in the dog. In the poor hydrophobic patient the image of the dog often haunts the mind to madness. Dr. Bardsley, in a case which he attended, says, "I observed he frequently fixed his eyes with horror and affright on some ideal object; and then with a sudden and violent emotion buried his head beneath the bed clothes. The next time I saw him repeat this action I was induced to enquire into the cause of his terror—he eagerly asked if I had not heard howlings and scratchings? On being answered in the negative, he suddenly threw himself on his knees, extending his arms in a defensive posture, and forcibly throwing back his head and body, the muscles of the face were agitated by various spasmodic contractions; his eyeballs glared, and seemed ready to start from their sockets;—and at that moment, when crying out in an agonizing tone:—"Do you see that black dog?" his countenance and attitude exhibited the most dreadful picture of complicated horror, distress, and rage, that words can describe or imagination paint! The irritability of the whole system was now become excessive. He discovered the highest degree of impatience on the least motion of the air. Every action was accompanied with that hurry and inquietude which marks an apprehension of danger from surrounding

objects. The oppression of the precordia was evidently increased; and when he gasped for breath, the whole body was writhed with convulsions."

Under the influence of the disease the patient often experiences no aberration of mind, and the day before he expires gives directions about his family arrangements or respecting his funeral. The day before the Duke of Richmond died he wrote a letter to his sister Lady Mary Lennox, in anticipation of that issue always so certain, and absolved the commandant officer from any allegiance to his orders while under the paroxysms of the disease. Trolliet mentions one of his patients who gave directions about his funeral, and the rites of sepulture according to the forms of the Catholic religion. M.M. Enaux and Chaussier have given us a faithful picture and more detailed sketch of this dreadful disease. "As the wound is the hot-bed of the poison, so it is always by it that the symptoms begin. If it be closed the cicatrix becomes red, or bluish; it extends, sometimes opens afresh, and a reddish serosity oozes out; the sleep is disturbed,* agitated, troubled by starts and frightful dreams: the patient is overwhelmed with solicitude, heavy,

* Mead says "there is no sleep from the beginning to the end of the fever."

and plunged into a profound melancholy, without knowing the cause of it, and from which nothing can distract him; from time to time he has a sensation of heat; a shuddering which extends from the wound, mounts upwards, gains possession of the whole body, and seems to terminate in the breast and throat: frequently the pulse is small, hard, and tight. This state is the first degree of the disease, and lasts four or five days. In the second all the symptoms increase, the pulse becomes frequent, and indicates an irregular and nervous fever, which destroys the principle of life. The patient experiences a painful tightness of the chest and throat; the breathing becomes difficult, interrupted by involuntary sobs and deep sighs; from time to time convulsions are perceived, which are kept up or renewed by the slightest cause; in a short time reason wanders, the patient becomes furious, does not know those about him, and endeavours to bite them; every thing teases and irritates him; bright colours,* a strong light, acute sounds, sometimes even the simple agitation of the air renews the paroxysms of madness; consumed by internal heat, tormented by considerable thirst, he still dares not drink; the sight of

* In hydrophobia, water excites; in a diseased state of the nerves *red* seems to give pain; and maniacs are roused by scarlet as also turkey cocks, bulls, and buffaloes.

water, or even the idea of it, makes him shudder; the eye is haggard, fixed, sparkling, and appears inflamed; the voice is hoarse, the mouth filled with a frothy and glutinous saliva; every thing announces madness and characterizes hydrophobia. At one time preserving his judgment, mild and peaceable, plunged into a profound melancholy, he is conscious of his misfortune, foresees its attacks, and gives notice of them to his friends; but almost always the sight of water causes him a secret horror which reason is not able to overcome. Agonies and vomitings aggravate these evils—the pulse becomes unequal, intermitting; a cold sweat covers the whole body, and death puts an end to this scene of horror. This state lasts at most three or four days." Trolliet mentions a remarkable instance of colliquative sweats in the case of poor David,* who, though he succeeded in destroying the wolf which had laid so many victims tributary to the mortality of hydrophobia, became the victim of self-devotion. " Des suers si abondantes qu'il mouilla dix-huit chemises en une nuit." (Page 65) And we have on our table the case of a Mr. Griffiths, Surgeon, from Kent, who died at the

* Le jeune homme armè d'un trident, l'attend de pied ferme, brise son trident sur le dos de l'animal, enfonce la main droite dans sa gueule, au moment où il s'élance sur lui, le serre etroitement le renverse, lutte et le retient, jusqu'a ce que son pere l'ait tué entre ses bras."

Middlesex hospital, on the 7th May instant, having been seized with hydrophobia on coming up to town —his whole frame, it is stated, was covered over with profuse perspiration—the account goes on to state that ten ounces of blood was taken from the arm, but " his case was beyond all human aid."

The Ormskirk Quack Medicine—the American Remedy, the Russian specific of alisma plantago or water plantain, purchased by that Government for a considerable sum, Marochetti's sublingual vesicles, and gargle of Genista—Majendis's injection of tepid water, and Dupuytren's crude opium into the veins have all been tried without effect. It is worthy of remark however that in one of Trolliet's cases the exhibition of the alisma plantago seems to have prolonged the period of the disease, and seeing that this is the case, it would be of the utmost importance for the chemist to investigate and eliminate the active principle of this plant. Dupuytren, by injecting by means of " Anel's syringe" the mucous extract of opium in the saphæna and cephalic veins to the amount of two grains into the former, and four grains into the latter obtained for the patient three hours of complete tranquillity, and this has suggested some practical hints to Dr. Booth, of Birmingham,* who very properly, we think, censures

* " Practical Observations on Hydrophobia."

him for having allowed this respite and calm to pass away unimproved, and not following it up by the exhibition of internal remedies. This promising conquest Dr. B. would improve by the employment of *acetate of morphia* in preference to crude opium, of which he would inject into the cephalic vein twenty-four minims in solution, (equal to four grains of opium), with two drachms of distilled water at 98°. F. He would then wait ten minutes for the result, and repeat the injection if found necessary. Dr. Booth gives preference to the acetate of morphia on account of its anodyne and sedative powers, together with a *diaphoretic* property. This he would only rely on as a preliminary step, conjoining those general therapeutical principles which the disease might suggest. Dr. Booth's view of the case is precisely what had been before contemplated by Dr. Coindet, whose experiments warrant a favourable issue from their repetition in hydrophobia, as far as the nervous derangement is concerned; but we must not forget that the blood is diseased, and that its vitality must be restored—other means must therefore be conjoined with this remedial measure. Dr. Coindet, of Geneva, injected opium into the veins five times, at intervals of five minutes, one and a half drachm of the solution consisted of one scruple of crude opium, dissolved in an ounce of distilled

water—the case was completely successful; it was one of severe nervous excitement from the bite of a dog, accompanied by marked opisthotonos.*

We have already stated that, both in this country and in France, we have distinct evidence of the non-existence of Marochetti's sublingual pustules. In reference to those that died at Birmingham in 1824, the Birmingham Gazette, in giving the tragical details, expressly adds, "the tongue was examined, but nothing remarkable discovered," and in the cases in the Hôtel Dieu, at Paris, it was stated, "Il n'y a rien remarquable sous la langue."

Among the remedies of more recent times bleeding *ad deliquium*, and the exhibition of opium seem to have been most relied on. Dr. Schoolbred, of the Indian hospital at Calcutta, vaunted his having cured, by repeated and copious bleedings, a patient seventeen days after having been bitten by a mad dog and which appeared to present all the symptoms of genuine hydrophobia. He was led to this treatment by a similar successful result by Mr. Tymon. This, however, has been very frequently adopted not only without any relief in the disease, but the reverse, and

* See the details in the "Bibliotheque Universelle, Fevrier, 1823."

yet it is repeated and persisted in, perhaps "that the patient may die easily!" The plan is by no means so recent, however, as may be believed; it is adverted to by Dr. Mead, and recommended by the older physicians long before his day. This, however, repeated on one of Trolliet's patients, evidently *accelerated his fate.* Gueytte was bled three times to syncope: notwithstanding the loss of seven pounds of blood, the progress of the disease was fearfully accelerated. The system so far from being reduced, ought, on the contrary, to be strengthened against this formidable assailant, the attacks of which are so terrible; and it has occurred to us that the transfusion of blood, conducted with all the precautions pointed out by Dr. Blundell, (in cases of the system sinking under violent uterine hemorrhage) might be an experiment of the greatest consequence and moment. After copious bleedings, if this experiment is made, let the loss be supplied through the medium of transfusion. The blood seems altogether mortally diseased, and if removed and supplied by vital blood, the system might rally again.

In the instance of Guyot, another of Trolliet's patients, opium was administered in sufficient quantity to prove its utter uselessness as a remedy in hydrophobia, as far as mere introduction into the stomach is concerned; in this case one drachm

of opium, with three drachms of carbonate of potassa, was administered in two hours. And in a case of hydrophobia, under Dr. Babington, twenty-five grains and half a drachm were repeated at three intervals; so that in eleven hours no less than 180 grains of opium were taken without the least benefit, or even without producing any sleep! It is quite absurd and unpardonable to repeat what has been so often tried before and proved to be ineffectual. He that would bear away the palm of victory, be crowned with the hosannas of philanthropy, and receive the civic crown, must be *decided—prompt—bold.* He must know what he is about, and what has been done before. There is no time for pause. While consideration leans on her staff the disease is every moment gaining a fresh accession of strength, and the chances are much more favourable to success when remedial measures are employed in the early stage of the disease, than when it has laid the vital functions under tribute. Both vinegar and solutions of chlorine * have been stated as effective of cures at Pavia, and in the "Ospedale di Milano." The former announcement is by the late Brugnatelli of Pavia, and is

* Giornale di Fisica e Chimica, agosto, 1816, and Secondo Bimestre, 1818.

accompanied with some interesting remarks by Signor Configliacci. Trolliet, however, used solution of chlorine as an external appplication to the wound, and as an internal remedy, without any advantage, in several of his patients. We are not aware that there are any other remedies recommended worth particular consideration, and should have no faith whatever in nitrate of silver, which has also been employed in epilepsy at the rate of one-eighth grain for a dose. We believe that lunar caustic, or nitrate of silver, has been found a remedy just as ineffective even in this complaint as the Trailing poison oak (Rhus toxicodendron) recommended by the late Dr. Alderson, of Hull. Mr. Caton has administered, in fifteen or sixteen hours, no less than fifteen grains of lunar caustic. Though externally a powerful escharotic, the case may be otherwise when taken internally, as corroborated by Signor Sementini, of Naples, (Journal de Pharmacie, février, 1822.) Mr. Caton commenced by minute quantities, augmented to six or eight grains each day, and even more, triturated with vegetable extract: the patient is to be preserved as much from the light as possible, to escape the "blue disease," the consequence of the long-continued use of nitrate of silver.

There is a curious receipt for the cure of hydrophobia, said to exist in Cathorp church, in

Lincolnshire. The legend reports that the whole town was bitten by a mad dog; all who took the medicine did well, but the rest died mad.— "Take the leaves of rue picked from the stalks and bruised, Venice treacle, or mithridate, and the scrapings of pewter, of each four ounces, simmer these over a slow fire, in two quarts of strong ale, till one pint is consumed; then keep it in bottles stopt close, and give of it, nine spoonfuls to a man or woman seven mornings together fasting, and six to a dog. This will not fail, by God's blessing, if it be given within nine days after the bite of the dog. Apply some of the ingredients from which the liquor was strained to the bitten place." These are the *ipsissima verba*, and though the efficacy of this medicine may well be questioned, it is not a whit more extraordinary than the *morceau* which Hardy, in his Travels in Mexico, has given us as a recipe from Don Victores Aquilar, and is altogether very much like his own charcoal pills for the bite of the rattle-snake! Indeed, we are inclined to put very little faith in the prescriptions of South American physicians, and some of those communicated to us have excited our wonder and amazement. However, the recipe itself is as follows:—"Soak a rennet in little more than a tumbler of water for about five minutes; add of pulverized *sevadilla* as much as may be taken up by the three fingers and thumb; mix it

thoroughly, and force it down the throat between the paroxysms. Put the patient in the sun (!) or near a fire, to be well warmed. If he continue furious the dose must be repeated. A profound sleep succeeds, lasting 24 to 48 hours (!) He is then attacked by vomiting and purging, and the poison is effectually expelled. He will then be restored to his senses, ask for food, and be cured ! !" East Indian and American remedies, we fear, are of little worth. Mercury and arsenic have been found entire failures. The " Tonquin remedy," brought by Mr. Cobb from Tonquin, appears to be a compound of native and factitious *sulphuret of mercury*, or cinnabar, being twenty-four grains of each, added to sixteen grains of musk. This dose is to be taken at once, in a tea-cup full of arrack, which is said to secure the patient for thirty days, when it is to be repeated, and to be used as soon after the bite is received as possible; and if there be any symptoms of disease, the second dose must be repeated three hours after the first, which is said to be sufficient. Whether the *ophioxylon serpentinum* would secure the system against the attacks of hydrophobia, we do not know, nor are we aware that it has ever been tried; every possible remedy should be suggested in which there exists any rational ground of hope, and may not have

been hitherto employed. Mr. Duncan, a medical gentleman from India, has given us lately an interesting account of a contest between the Munghoos, or Ichneumon, (Viverra Ichneumon), and the Cobra de Capello, or Hooded Snake, the bite of which, a friend informs us, generally proves fatal to a human being in three hours. The Munghoos ate the ophioxylon serpentinum, with which it was supplied, and renewed the contest. It was a fight between a tame one and an ordinary sized Cobra de Capello. The Munghoos was wounded in destroying the two poisonous fangs of the serpent (one on each side,) one of these was removed, and the other broken. The munghoos swallowed, in an agony of excitement, some bruised leaves of the plant, and finished the conflict by effectually destroying the serpent: the following day the animal remained well. Passing over the story of the contest of the toad and spider, with the adjunct of the remedy found in the plantain leaf by the former, which may be considered fabulous, (though we have been lately informed of a similar rencontre, and a similar resource,) it seems extremely probable that the instinct wisdom with which divine providence has invested the inferior creation, should enable them to discriminate the means of safety and cure when wounded by their enemies, as well as subserve as a shield of protection against their attacks;

whether or not the Ibis is a physician to the extent to which it has had the credit, we know that dogs and cats eat grass to serve as an emetic, which purpose it seems to accomplish. Perhaps were we to attend to nature more and art less, it would be better: there can be no doubt that many valuable and practical hints, supplied from instinct being, might sometimes enable reason to acquit herself with credit and êclat. Unsophisticated instinct has received its knowledge from the highest source of all, while reason is trammelled by circumstances and contingencies, blinded by the false glare of authority and a name, and becomes the slave of opinion and accident.

We believe that Messrs. Humboldt and Bompland were the first to give a description of the plant termed "Guaco," called by them *Mikania Guaco*: it has been reared in this country with success, and these eminent travellers found it in the temperate regions of South America. According to the accounts supplied by them, the plant proves eminently serviceable in bites of venomous serpents, the leaves of the guaco being rubbed on the wound. As a preventive, one or two spoonsfull of the juice of the plant is taken internally, and incisions to the amount of five or six having been made on different parts of the body, the system is inocu-

lated with it by the introduction of some of this juice into the wounds. It might be worthy of consideration how far the inoculation of the system by some means that might give rise to artificial eruptions, would secure the individual against the attacks of hydrophobia, especially under circumstances where the nature of the part proves an interdict to excision.

Sir Robert Ker Porter has presented to the Royal College of Physicians in London specimens of both the plant and the expressed juice, from Caraccas. It is considered on that continent a certain antidote to the bite of venomous reptiles, such as the various serpents, black scorpion, and is even held to be remedial in hydrophobia.* Attention is said to have been first attracted to it by observing that it was used by a species of the genus *Falco*, which preys on serpents and other reptiles. We must not certainly reject its asserted powers and virtues until they have been actually falsified by several trials, and a great variety of experiments made with it are *desiderata*. We are by no means prepared to say that what would cure the bite of a poisonous serpent would prove equally

* On the 14th of last month, (May) this remedy was tried in a case of hydrophobia, in St. Thomas' Hospital, in the Borough. The patient was a boy of 16 years old, who had been bitten several months ago. The exhibition of Guaco appears to have produced a striking momentary change, but no permanent good, and the patient died in 38 hours.

successful in hydrophobia; indeed, if we are not misinformed and greatly mistaken, serpent poison is not the same in all the serpent race, and the train of symptoms to which they give rise are very varied. Sometimes a mere local inflammation is the result, and no more. In some cases the individual, as was expected in that of Paul, drops down dead suddenly, after the infliction of the wound, and this takes place in the *Tic Polonga*, and *Cobra de Manillo;* at other times the action of the poison is greatly prolonged. In some the poison is promptly septic, while tetanic symptoms are presented in others. This, however, is not the place to discuss the phenomena of serpent poisons at length.

From a consideration of the phenomena of hydrophobia, it is evident that the bronchiæ and parts connected with them, are the seat of active inflammation, as well as the brain, and it seems likely that the latter is the consequence of a diseased circulation. We think Mr. Charles Bell's view of the phenomena of the nerves distributed to the face serves to account satisfactorily for the convulsive throes and spasmodic contractions in the throat, and are of opinion that of the two distinct sets of nerves substantiated by him, those connected with the organs of respiration are more directly and immediately affected. The whole

circulation is diseased, and the rabid virus is evolved in the bronchiæ either as chemically complete, or in its elements partially; the contact of air, &c. supplying the rest. This being the case, remedial measures should be directed at once to the seat of the disease, which is presumed by this view of it to be the circulation, and the inflamed mucous membrane of the bronchiæ. The only difficulty that then remains is to ascertain whether the nervous derangement and the inflammation of the *pia mater* and other parts of the cerebral organs be not secondary consequences, since we well know "that when one member suffers, all the other members suffer with it" in sympathetic affection.

From analogy, and notwithstanding that Dr. Marcet has given arsenic in this disease, circumstances seem to plead for its internal exhibition in *combination* with opium or hyociamus. It certainly relieved the spasms in the case of Trismus, already adverted to. The Tanjore pill having been found efficacious in India in the cure of serpent poison, and its chief ingredient being arsenic, Mr. Ireland exhibited with invariable success, *Fowler's solution of arsenic*, in doses of two drachms, repeated every half hour for three or four hours, in the case of five soldiers bitten by the *coluber carinatus* in St. Lucia. It might be

exhibited conjoined with opium, in limited doses, and injections of ascetate of morphia, as recommended by Dr. Booth, might be made into the cephalic vein. The precise constituents of the Tanjore pill are not, however, that we are aware of, known: it is an Indian preparation, containing, according to Dr. Russel, arsenious acid, a pill of six grains yielding about three-fourths of a grain.

It is by no means our intention to enter on the question of the *general treatment*, that being modified by circumstances, and the medical practitioner must be guided by the symptoms as they rise and are presented to him: the *sulphate of quinine* may be employed with great advantage, perhaps in its incipient stage, and we think when the specific is found, its efficacy and the question of life and death will mainly depend on the prompt measures adopted in the *first period* of the disease, before the chances are hermetically closed by the invasion of the angel of death. Indeed, the vivid mental picture which is sometimes displayed is sadly symptomatic of its fatality, the precursor of mortality, and the very image and counterpart of that remarkable "clearance" of the mental vision, sometimes even prophetic, occasionally exemplified before we have "shuffled off this mortal coil."

Whether the nervous system be primarily or

secondarily affected, it is extremely advisable to apply voltaic electricity to the patient, *ab initio*. The pensile galvanic pile is a convenient mode of excitement, and is promptly renewed; the organs concerned in respiration should be included in the circle formed by the conducting wires, and afterwards the brain. Our chief reliance would be on an atmosphere of chlorine, applied in the way already described, to the surface of the body, so that the system should be charged with it. The next remedial measure is to impregnate the atmosphere which the patient breathes, either with chlorine or with the vapour of red fuming nitrous acid, placed near, and the latter would less irritate the lungs; the inflammatory action might be subdued by the frequent internal exhibition of chlorate of potassa, in doses repeated at frequent intervals, of from four to eight grains: we know oxygen has been suggested by way of trial in this disease, but the important facts established by Count Morozzo, Allen and Pepys, and more recently by Mr. Broughton, give us no reason to expect relief from that quarter. Animals soon die in pure oxygen, and the gas, it is interesting to remark, suffers no chemical change.

We have already adverted to the absorption by the pores of the skin, of carbonic acid gas, and the experiments of Dr. Edwards, in the "Annales

de Chemie et de Physique," (January, 1819,) corroborate this by analogy. It is well known that water applied to the surface of the skin allays thirst, as immersion in salt water: and in the desert the traveller has revived from that fatal state into which he was fast sinking by skins of water being thrown on the body. In Mr. Broughton's interesting experiments,* we find in the case of animals that perished in chlorine gas, the peculiar odour was perceptible throughout the structure of the lungs, a full proof that the gas had passed the epiglottis, and entered the system by the air passages: the tissue of the lungs was also dyed yellow, and we are not acquainted with any aerial agents whose power to subdue inflammation, &c. of this kind, surpasses chlorine, and the vapour of nitric, and nitrous acid gas: the remedy must be introduced through the medium of respiration, in order to bring it in immediate contact with the mucous membrane of the bronchiæ, the seat of active inflammation.

Frictions of iodine externally in the region of the lungs may be also esteemed a remedial measure worthy of trial. When the skin, *however dry*, is brought in contact with chlorine there is the sensation of a considerable increase of temperature immediately produced, though the thermometer is

* See Mr. Brande's Journal for 1830, p. 15, &c.

completely unaffected in the case: this fact was first pointed out by Dr. Hare, of Philadelphia, and we discovered a precisely similar phenomenon with nitrous acid gas. (Philosophical Mag. and Journal, vol. 60, p. 100.) This fact proves a very determinate and specific action on the skin, and it must not be forgotten that comparatively dry chlorine will act a very different part from the same gas held *in solution in water*,—*hygrometrically* as well as chemically. In the case of chlorate or oxymuriate of potassa, its medicinal efficacy is connected immediately with the circulation: it will soon give evidence that it is so by lowering the pulse without any prostration of physical strength. It was exhibited on our suggestion in a case of epilepsy, and the blood that was subsequently drawn from the patient was remarkably bright, being of a brilliant red. Its effect is frequently instantaneous, and the morbid state of the blood in hydrophobia seems to warrant us to expect some important relief from its exhibition. M. Ségalas D'Etchepare has shown that besides a direct and sympathetic action on the organic solids it exercises a very manifest one on the blood, and consequently over the whole economy through the medium of absorption; and had Majendie's injections of tepid water into the veins, held *chlorate of potassa in solution*, the case might have been happily altogether different.

In a recent communication by Dr. Stevens to the College of Physicians, on the malignant fevers of the West Indies, it is stated that the blood is dark and very fluid, and that neutral and sub-alkaline salts impart to it a bright arterial colour,—he deduces from hence the importance of exhibiting these medicinally. We are glad, therefore, to find that the views we have for many years sustained are thus analogically confirmed.

Having no medical hypothesis to support, we have endeavoured to bring before the mind a portraiture of facts, unfettered and untrammelled by any preconceived opinions; we have considered it a duty to aid, however feebly, the progress of the question, and to seize an opportunity, as Celsus expresses it, of doing good even at the risk of being stigmatized with rashness. "Cum quadam temeritate medicamenta arripere oportet." In every point of view it is the most difficult question in medical literature, and it has been our wish to simplify it, closing our remarks with Trolliet, "cependant nous conservons la pensée consolante qu'il existe un spécifique, nous devons l'attendre encore. Une telle decouverte servit d'un prix inestimable, et suffiroit pour acquitter la dette de plusieurs siêcles."

POSTSCRIPT.

The *simultaneous* occurrence of the rabies canina in different parts of the country is worthy of attention, and the fact proves it to be a phenomenon connected with some universal principle. Electricity is, as far as we know, the only agent likely to be associated with a generalization so extensive. The present season remarkably confirms our observation, and we consider that the latent germs were the produce of the late severe winter.

As a cupping glass may not always be immediately available on the infliction of the bite of a mad dog, the following very simple means may be made to supply its place, and will prevent absorption :—Dip a bit of rag or of sponge into brandy, or any other kind of spirit, place it on the spot, and set it on fire—then invert over it a wine glass—the combustion will rarify the air which will escape, and consume the oxygine. The burning material will form a very good *moxa*, and the glass must be held over it a few moments before its edge is brought in contact with the skin. On hydrophobia being declared, the *wound should be opened*, and a topical remedy applied, such as *gaseous chlorine*, &c.

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